

SUNCREST NURSERIES

Watsonville, CA



WATER RECOVERY SYSTEM
IRRIGATION SCHEDULING

Jim Marshall

Suncrest Nurseries, located on the outskirts of Watsonville, is a wholesale nursery growing over 3,000 varieties of containerized ornamentals for independent garden shops throughout California. The nursery grows two million plants a year on three properties with a total of 60 acres in production.

Suncrest Nurseries was established in 1989 when a group of investors purchased the historical Leonard Coates Nurseries, which was founded in 1870 and was one of the first nurseries to promote California native plants. With such a deeply rooted legacy, the primary goal of the new owners was to ensure the long-term sustainability of the business.

Jim Marshall, equipped with a background in hydrology and a history of working with the original nursery, took the position of General Manager. His highest priority in re-developing the nursery was to address the issue of water so the company would be prepared for the future. He designed a water recovery and computer-operated irrigation system that has cut their water use in half. As Jim explains, “It was just common sense that we didn’t want our water to go down the drain and not use it as efficiently as possible. It was also very obvious that we would some day be facing a water crisis because there is so much development and we are all sucking from the same straw. By doing this, we are making every effort to help our future. The company has been in business as a nursery since 1878 and there is a lot of legacy that I would like to sustain.”

WATER-SAVING PRACTICES

- A water recovery and recycling system captures nursery runoff and blends the nutrient-rich water with fresh water for reuse as nursery irrigation water. (See Water Recovery System text box.)
- Suncrest irrigates based on plant needs by means of a computer-operated irrigation delivery system that precisely controls irrigation scheduling and timing. As Jim explains, “We have very precise control over the amount of time that we water. We are pumping approximately 1,800 gallons a minute and the consequence of being much more precise in our delivery time is that we are conserving water.”

- The nursery is organized in irrigation zones based on plant water needs in order to maximize water distribution uniformity.
- They irrigate most of the plants in 5-gallon and 15-gallon containers with drip emitters.
- Overhead sprinklers with closely spaced low-pressure nozzles are used for plants in 1-gallon containers.⁶
- They are experimenting with capillary mats for the 1-gallon containers.⁷

BENEFITS

- The water recovery and recycling system provides greater control over nutrient management because it

⁶ They do not use drip irrigation with 1-gallon containers because it is not cost effective – it is very labor intensive to put an emitter into each 1-gallon container. In addition, there are some benefits of overhead water application for syringing – the application of water to cool the plants down and prevent plant wilt – and washing the leaves to prevent dust accumulation and associated mite growth.

⁷ A capillary, or aqua, mat is a multi-layered medium composed of drip tapes and an absorbent sponge in between a tarp and a non-permeable layer on the bottom. Plant roots uptake water into the pot through tiny holes in the top layer of the mat.

is a closed system. It promotes healthier plant growth and reduces inputs by capturing excess water used to leach salts that build up from fertilizer, and recycling the nutrients back through the system.

- By recovering and reusing water, the nursery is reducing its reliance on groundwater.
- The drainage and recovery system has eliminated soil erosion and kept nutrient-saturated run-off from leaving the nursery, which also prepares Suncrest for regulations that could arise in the future.
- Profiling land to maximize gravity flow for the drainage system reduces electricity costs. Additionally, pumping water from the storage ponds requires less energy than pumping water from the ground.
- Increasing input efficiency has allowed them to expand and grow the business.

COSTS

- The recovery system costs include engineering consulting fees for the general design of the drain system, ground preparation fees and supplies including ground cloth (impermeable barrier) and drainage and distribution pipelines.
- Equipment costs for water recycling include a filtration system, a variable frequency drive pump, programmable logic controller (PLC) system, and a computer and software package to operate the system.
- Operating costs include electricity to operate the pump.



Suncrest Nursery—Photo credit: Suncrest Nursery

“The nursery is a manageable unit. You see what is coming in and you know what is going out - hopefully what is coming in are raw products and what is going out are saleable products and you are also reducing the waste. Waste is not part of a profit package. It is something that you consume without getting the benefit of a sale. The water is a part of that too.”

—Jim Marshall

LESSONS LEARNED

- **Think ahead.** Jim recommends addressing potential issues with a focus on the future. “We did not do it under the threat of regulation, we did not have somebody standing outside of the gates saying “you will do this and you have X amount of time, or worse, you have a ten thousand dollar fine until you do it.”
- **Let gravity do the work for you.** Jim explains, “This is all common sense. The biggest concept that most people don’t appreciate is gravity. Water flows downhill and that is the simplest thing – all you have to think is where am I going to collect it? You want to design it at the lowest part so that gravity does the work for you.”
- **Buy a variable frequency drive pump.** According to Jim, “With these, you are only consuming the power that is required for the need that you have – a demand system.”
- **Get a good filtration system.** It is a good idea to have a very high capacity, self-cleaning filter like the Amiad Filtration System. As Jim explains, “The filter is important because the pond is exposed to sunlight and run-off fertilizer. Algae quickly grow in the water and plugs up sprinklers and drip emitters.”

Water Recovery System

An impermeable Visqueen 6-mm thick, polyethylene barrier lines the entire nursery and eliminates percolation losses and sediment erosion. Each nursery block is gravity profiled to direct the flow of surface runoff, and rainwater from the downspouts on all buildings. A network of drains and underground trenches transport runoff to recovery ponds at the low end of the nursery blocks. After blending the recovered runoff with 50% fresh water, they recycle the water back through the irrigation system.